Quality Control

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Out of Sequence

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Drill Holes

Drawing

Finish

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Turning Sequence
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Ripples in Bend

Torque Waves in Extrusion

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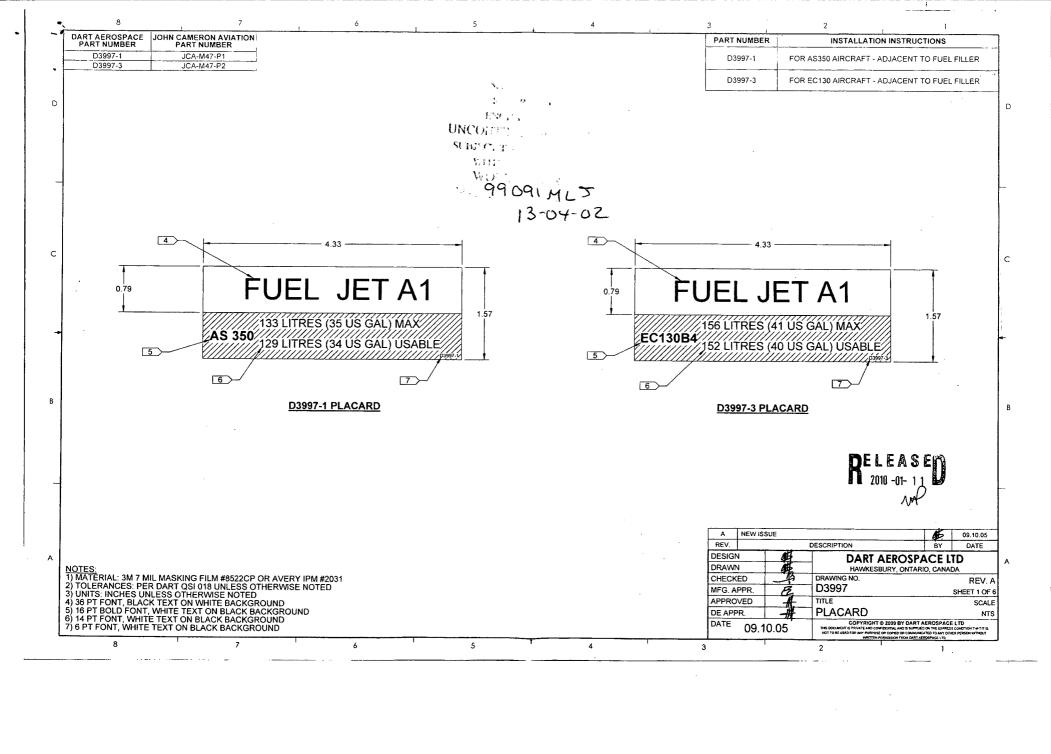
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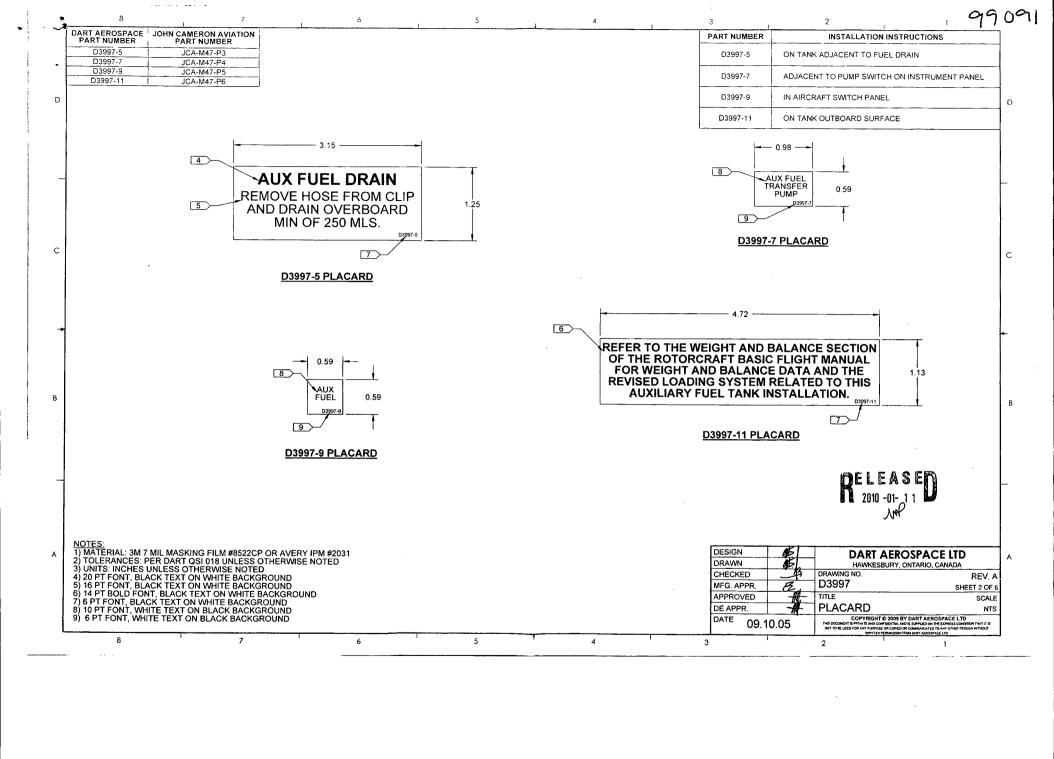
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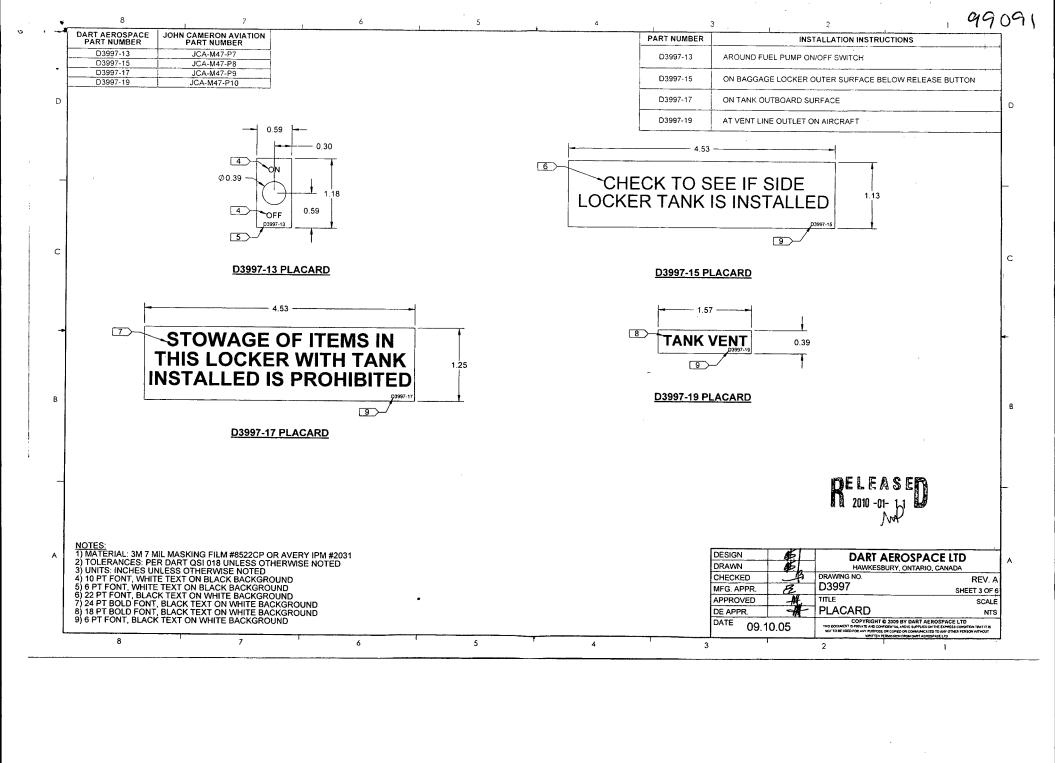
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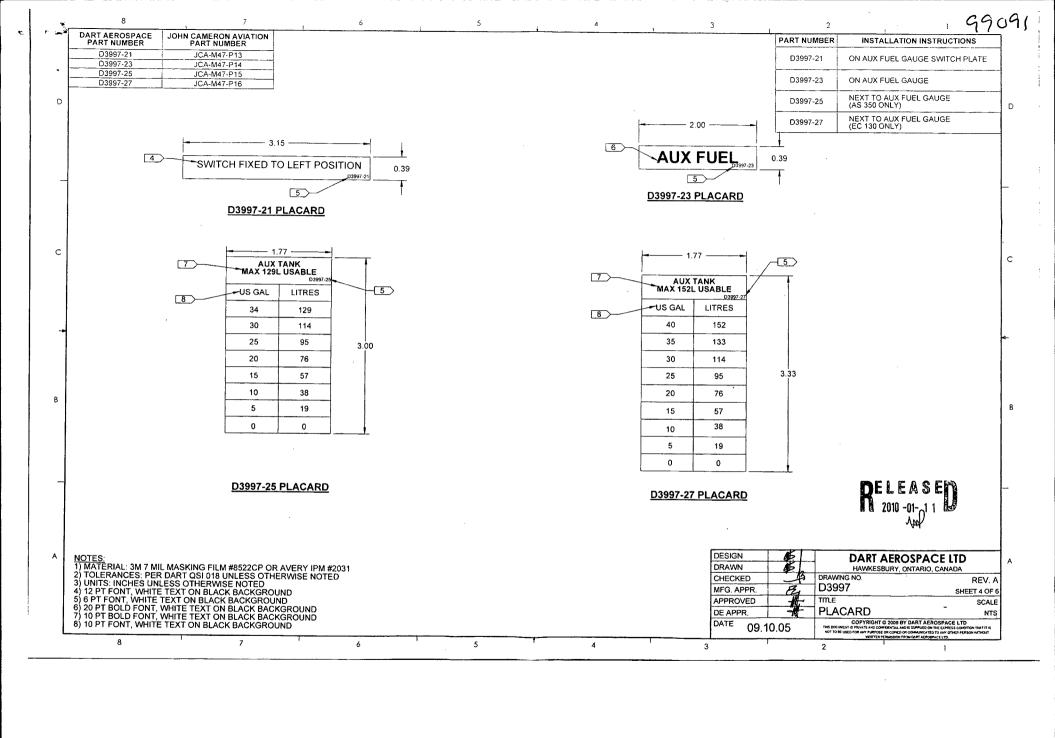
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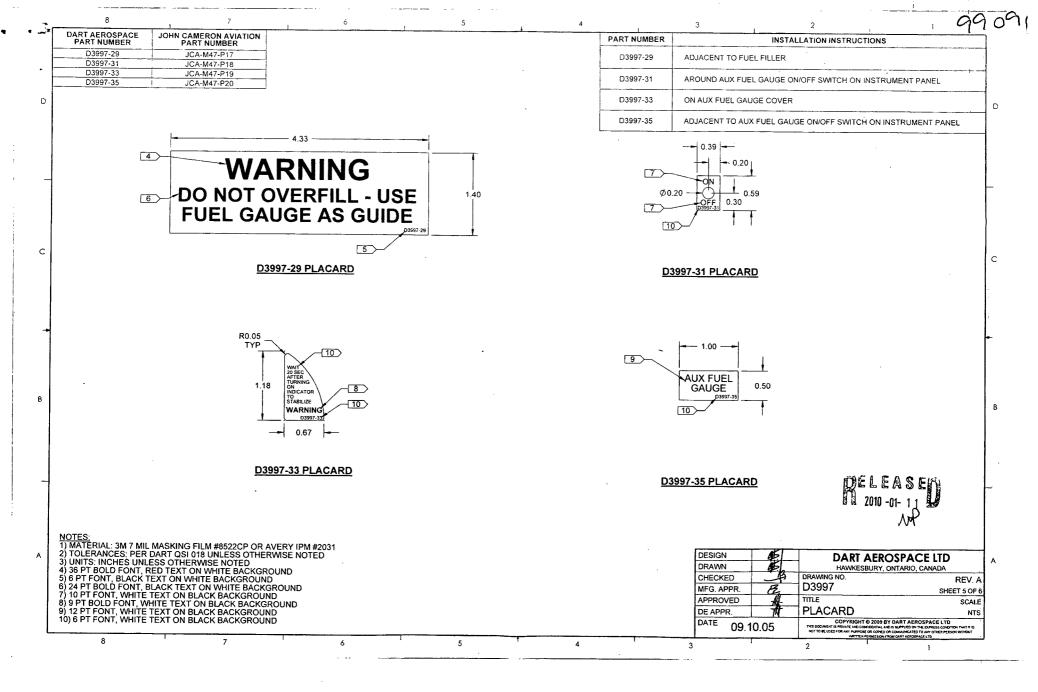
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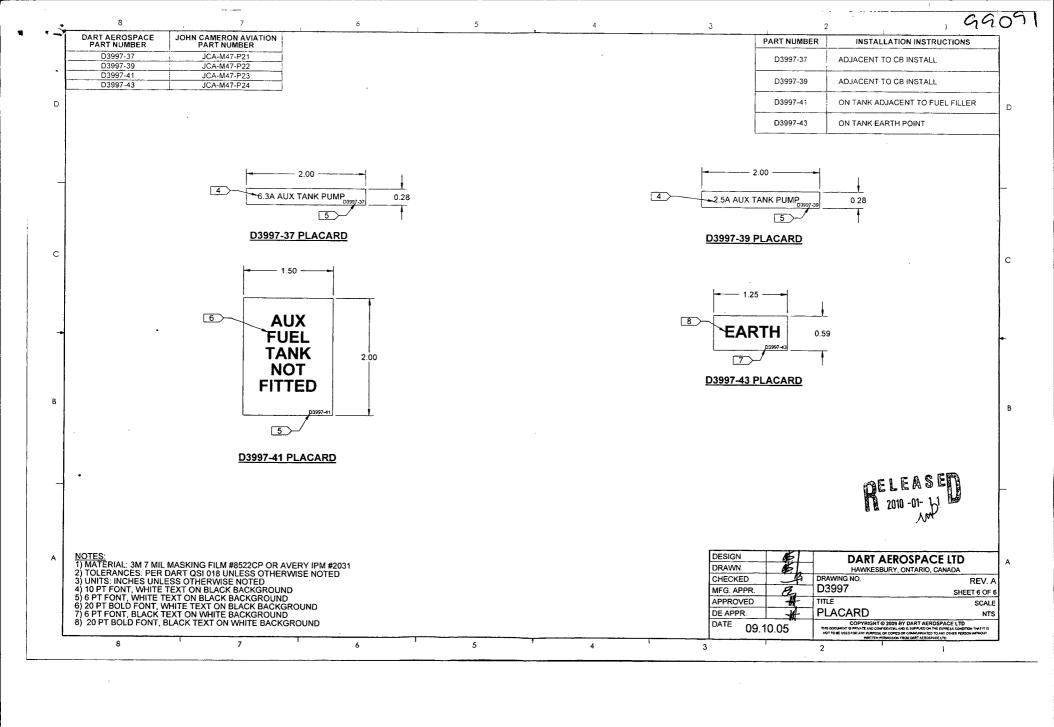












Studio de Lettrage 210 Main Street W Hawkesbury, Ontario K6A 2H6

INVOICE

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19822

Date:

04/05/2013

Ship Date:

Page:

Re: Order No.

WO9626

Sold to:

Ship to:

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1270 Aberdeen Hawkesbury, Ontario K6A 1K7

Dart Aerospace Ltd

Hawkesbury, Ontario

Business No.:

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Certification:
We hereby certify that:
The above the listed items were manufactured, repaired and/or inspected in accordance with applicable drawings and/or specifications;
All work was accomplished in accordance with the Dart Aerospace     Purchase Order:
<ol> <li>Results of all inspections, chemical or physical tests, as well as other evidence, which shows the acceptability of raw materials, parts and/or assembly components are on file and available for inspection at any time.</li> </ol>
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APPROVAL: REVEN SAF. MARIE DATE:
Signature: Alen St. Mon-
Title: Project Wordingutur April 5,2013.

## 3M

#### **Product & Instruction Bulletin 8522**

Release I, Effective September 2008 See Bulletin Change Summary and end of Bulletin This Bulletin now includes Instruction Bulletin 4.23

# Scotchcal<sup>™</sup> Changeable Opaque Imaging Media

8522

#### **Product Description**

### Recommended Types of Graphics and End Uses

#### For Thermal Inkjet Printing

This durable, 7 mil, opaque, changeable film is optimized for use with selected thermal inkjet printers and inks. Ink dries quickly on the film. When overlaminated, it is warranted for medium term, outdoor weatherable graphics, and long term indoor graphics.

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the  $3M^{\mbox{\tiny MCS}}$  Warranty. Please read the entire Bulletin for details.

- First surface images (the image is on top of the film) for opaque posters and signs, including:
  - Graphics for vans, personal vehicles, trucks and buses
  - Novelty posters
  - Retail and point-of-purchase displays
  - Information graphics such as maps and directories
  - Entertainment promotions in museums, zoos, parks, theatres, sports venues
  - Education and presentation graphics
  - Legal and courtroom exhibits
- For flat or simple curved surfaces, with or without rivets, used in vertical (± 10°) applications

#### **Limitations of End Uses**

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs or recommend other products.

## Unsuitable End Uses for This Product

- Not for electronically cut individual letters and numbers
- · Fleet applications in areas that use salt for winter road maintenance
- Application to non-warranted substrates, including wallboard
- · Applications subjected to gasoline vapors or spills
- · Application to corrugated or highly irregular surfaces or sharply raised areas
- · Graphics applied to stainless steel, including stainless steel vehicles
- On flat surfaces with rivets, tenting of 4 to 10 mm around rivets may be expected; rivets may be cut around to eliminate tenting.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

About Water-Based Inkjet Technology

Standard inkjet technology is water based. Water-based chemistry is susceptible to the extremes of heat and humidity. This is a factor in most product constructions on the market. Read the Fabrication, Shelf Life and Storage sections in this Bulletin. Staying in the middle of these ranges always provides optimum performance.

## **Compatible Products**

#### **3M Graphic Materials**

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

This Bulletin provides details about the base film and construction options and warranty. Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in **3M Related Literature** at the end of this bulletin.

#### **3M Graphic Materials**

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

#### Film

3M™ Scotchcal™ Opaque Imaging Media 8522

#### **Overlaminate**

- 3M ™ Scotchcal ™ Luster Overlaminate 8519
- 3M™ Scotchcal™ Matte Overlaminate 8520

#### **Printers and Inks**

HP Designjet Printers	HP Inks
<ul> <li>2500CP and 2000CP</li> <li>2800CP and 3800CP</li> <li>3500CP and 3000CP</li> <li>HP Designjet 5000 and 5500</li> </ul>	<ul> <li>Designjet CP Ink System UV (pigment-based)</li> <li>Designjet CP Inkjet System (imaging ink)</li> </ul>
• Z6100	HP 91 Vivera Ink System

Epson Printers	Epson Inks
Stylus Pro 9500	Archival Inks
<ul> <li>Stylus Pro 10000 printer</li> </ul>	
<ul> <li>Stylus Pro 10600 printer</li> </ul>	

#### **Characteristics**

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

Characteristic	Description
Media	7 mil, white, opaque graphic film
Liner	Low-slippage, lay flat paper
Adhesive	Changeable, pressure sensitive
Thickness	Media with adhesive: 7.5 to 8 mil (nominal)
Warranted application substrates	See next page.
Application surfaces	Flat or simple curved surfaces, with or without rivets, used in vertical (± 10°) applications (no corrugations)
Application temperature range	28° to 110°F (-2° to 43°C) (air and surface)
Removable	For up to one year; see Warranty Information

Characteristic	Description
Warranted application substrates	Some substrates may "out-gas", resulting in tiny bubbles throughout the surface of the graphic. For maximum performance, be sure the substrate you select is properly cleaned and prepared as recommended by the manufacturer. See Instruction Bulletin 5.1 for additional information.
	Alodine (anodized aluminum)
	Automotive panels (automotive painted steel)
	Fruehauf (painted aluminum)
	FRP (fiberglass reinforced plywood)
	• Glass
	Imron ® (polyurethane-painted metal panel)
	Acrylic
	<ul> <li>Sintra ™ board</li> </ul>
	Note: Use on any other substrate is strictly on a graphics manufacturer and customer test and approve basis. Test for both adhesion and removal characteristics. The plasticizer in some banner materials may migrate. This may cause the edge of the graphic to peel or lift off of the banner. For optimum performance, follow the guidelines in the section, Creating A Laminated Overlap, on page 4.

#### Warranty Information

The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor. The warranties in the following table(s), given in years, are for finished graphics exposed in a vertical exposure in the United States except the Desert Southwest. See the warranty sections following this table for additional information.

#### 3M<sup>™</sup> MCS<sup>™</sup> Warranty Durability for Finished Graphics

Construction (film and overlaminate on	HP Printe	ers & Inks	Epson Prin	ters & Inks	Removal		
warranted substrate	Outdoor	Indoor	Outdoor	Indoor	1		
8522/8519	3 years	5 years	2 years	5 years	1 year without		
8522/8520					chemical strippers or tools		

#### Warranty and Limited Remedy

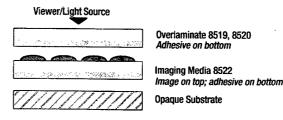
The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade: all 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

# Graphic Construction Options

#### **Opaque Graphics**

Opaque graphics made with imaging media 8522 require an overlaminate and an opaque substrate.



#### **Fabrication**

Different combinations of shop temperature and humidity can affect the handling of the media, the protective finish and the printed graphic. For optimum performance, use the *middle* of each of these ranges whenever possible.

**Shop Temperature** 

Acceptable: 60° to 95°F (15° to 35°C) Optimum: 65° to 73°F (18° to 23°C)

**Shop Humidity** 

Acceptable: 20% to 80% Optimum: 45% to 60%

Condition the Media Before Use

These steps are especially important if you are operating outside the conditions recommended under Fabrication, above.

- · Leave the media in its original packaging until you are ready to condition and use it.
- The day before you need it, remove the media from the box and remove the plastic.
- Condition the media for 24 hours in the same environment as the printer.

## Printer Settings for Optimum Quality

Refer to your Hewlett Packard printer manual for detailed operating instructions.

The quality of a printed image depends on a combination of factors: correct media selection, printing software and raster imaging processor (RIP), shop conditions, etc.

The printers qualified to use this media have print mode options that are programmed specifically for these media. Current charts that show the various modes and printing dpi, and the quality results you can expect are available at www.hp.com under the website's support section. We recommend that you print the same image at all of these settings to determine acceptable print and productivity results.

The highest quality settings are usually desirable for backlit applications.

The correct media selection makes most other necessary adjustments to the printer.

- For the HP DesignJet CP 2000 or 3000 series printers, select the Opaque Vinyl UV setting.
- For the HP Designjet 5000 series printers, select the 3M Changeable UV setting or the HP Durable Gloss UV or HP Colorfast Vinyl setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

- For the HP DesignJet CP 2000 or 3000 series printers, select the Opaque Vinyl UV setting.
- For the HP Designjet 5000 series printers, select the 3M Changeable UV setting or the HP Durable Gloss UV or HP Colorfast Vinyl setting.
- · For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

#### **Drying Guidelines**

Usually, the media can be laminated within 10 minutes after printing. However, especially in high humidity conditions, we recommend waiting 15 to 30 minutes before laminating.

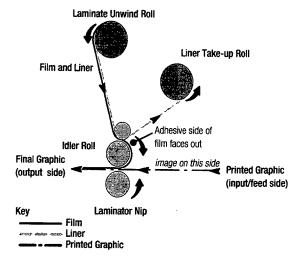
Use care when handling graphics that have not been laminated to avoid scratching and abrasion.

Graphics made with this media and ink combination typically may be wound directly on a take-up roll after printing.

Whether or not you want a warranted graphic, an overlaminate is recommended to enhance durability, especially in outdoor applications.

#### **Overlaminate**

FIGURE 1
Typical Laminator Thread-up



#### Creating a Laminated Overlap

Creating a laminated overlap helps ensure that the graphic does not peel or lift away from certain banner materials that may be subject to plasticizer migration. This method may also be used for flat, rigid or flexible sign applications.

- 1. Print the graphic as usual.
- 2. On all sides of the graphic, score *the film only* to the correct, final graphic dimension *without cutting through the liner*.

Weed away the excess film, leaving the bare liner exposed around the graphic. See FIGURE 2.

FIGURE 2 Trim and Weed Film Margin Only





3. Laminate the graphic as usual (see page 5), making sure that at least one inch of the bare liner is covered by the laminate. See FIGURE 3.



Dart Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7

Tel: 613 632 9577 Fax: 613 632 1053

#### PURCHASE ORDER

#### Purchase Order ID PO19479

Purchase Order Date 4/03/13 PO Print Date 4/03/13

Page Number 1 of 1

Order From:

VC-STU001

STUDIO DE LETTRAGE 2001

210 MAIN WEST

HAWKESBURY, ON K6A 2H6

CA

**Contact Name** 

Vendor Phone

613 632 5449

Vendor Fax

613 632 9491

Vendor Account Nbr

Buyer

Requisition Nbr Tax Resale Nbr

**Terms** 

Currency

**FOB** 

Chantal Lavoie

10127-2607

Net 30 CAD

Destination-Collect

Ship To:

DART AEROSPACE LTD

1270 ABERDEEN

HAWKESBURY, ON K6A 1K7

**CANADA** 



Line Nbr Reference Description/ Req Date/ Req Qty/ Ship Method **Unit Price** Extended Mfg ID Taxable Unit of Measure Revision ID Price Vendor Part Number D3997-19 Placard 4/05/13 10.00 Yours ppd \$8.0000 Yes Each Special lost: AS PER DWG D3997 REV. B99091 D3997-25 Placard 4/05/13 10.00 \$8.0000 \$80.00 Yours ppd Yes Each

Special Inst:

AS PER DWG D3997 REV. A

B99190

PO Total:

\$160.00

CERTIFICATE OF CONFORMITY REO'D UPON DELIVERY

No substitution or deviation without consent.

2P13-1-8

Certificate of Conformity or Material Certification required - YES NO

Change Nbr:

1

Change Date: 4/03/13